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**UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA  
OAKLAND DIVISION**

CELGARD, LLC,

PLAINTIFF,

V.

SHENZHEN SENIOR TECHNOLOGY  
MATERIAL CO. LTD. (US) RESEARCH  
INSTITUTE, SUN TOWN  
TECHNOLOGY, INC., FARASIS  
ENERGY USA, INC., FARASIS  
ENERGY, INC., FARASIS ENERGY  
(GAN ZHOU), INC., FARASIS ENERGY  
(GAN ZHOU) CO., LTD., GLOBAL  
VENTURE DEVELOPMENT, LLC, AND  
GLOBAL VENTURE DEVELOPMENT,  
INC.,

DEFENDANTS.

Case No. 4:19-cv-5784-JST

**SECOND AMENDED COMPLAINT FOR:**

- 1. PATENT INFRINGEMENT IN  
VIOLATION OF 35 U.S.C. § 271  
AGAINST EACH NAMED DEFENDANT**
- 2. BREACH OF CONTRACT AGAINST  
FARASIS ENERGY (GAN ZHOU), INC.**
- 3. BREACH OF IMPLIED COVENANT OF  
GOOD FAITH AND FAIR DEALING  
AGAINST FARASIS ENERGY (GAN  
ZHOU), INC.**

**DEMAND FOR JURY TRIAL**

Plaintiff Celgard, LLC (“Celgard”) files this Complaint against Defendants Shenzhen Senior Technology Material Co. Ltd. (US) Research Institute (“Senior-California”), Sun Town Technology (“Sun Town”), Farasis Energy USA, Inc., Farasis Energy, Inc. (collectively, “Farasis-US”), Farasis Energy (Gan Zhou), Inc., and Farasis Energy (Gan Zhou) Co., Ltd. (collectively, “Farasis-China”) (all four Farasis entities, collectively, as “Farasis”), Global Venture Development, LLC, and Global Venture Development, Inc. (collectively, “Global Venture”) (collectively, “Defendants”) and alleges as follows:

### NATURE OF THE ACTION

1. This lawsuit concerns the brazen infringement of Celgard’s patents by Defendants, as well as Defendant Farasis Energy (Gan Zhou), Inc.’s breach of a supply agreement with Celgard and breach of the implied covenant of good faith and fair dealing so that Farasis Energy (Gan Zhou), Inc. could enter into an agreement with Celgard’s Chinese competitor for the supply of infringing product.

2. Celgard, a U.S. manufacturer, located in Charlotte, North Carolina, has invested hundreds of millions of dollars into research and development for new battery technologies and is an innovator in both coated and uncoated separators used in lithium-ion batteries. Through years of investment, Celgard has worked hard to become a global leader in the development and manufacture of separators used in lithium-ion batteries for consumer electronic (“CE”) devices and electric vehicles (“EVs”). Celgard makes products in North Carolina, has facilities around the world, and ships products globally.

3. In the past 20 years, rechargeable lithium-ion batteries became very popular for use in varying applications. Lithium-ion batteries provide a power source with a higher energy density, longer cycle life, and higher operational voltages with a relatively small size and light weight, as compared to other rechargeable batteries. Separators are thin electrically insulating sheets used in batteries, and they sit between a battery’s electrodes—the anode and the cathode. The separator is typically microporous to allow for ionic conduction (of lithium ions) while preventing direct physical contact and electrical connection between the electrodes of the battery. Separators are critical because the touching of the two electrodes typically results in a major electrical “short”

1 of the cell and possibly in catastrophic failure such as fire or explosion.

2 4. Celgard has a broad portfolio of highly engineered products used in this industry  
3 and is one of the largest suppliers of separators to the lithium-ion battery industry. Celgard's  
4 separators are widely used in lithium-ion batteries for EVs, energy storage systems, power tools,  
5 and CE devices, such as notebook computers, mobile telephones, and tablets. EVs include both  
6 hybrid EVs, like the Toyota Prius, and full-EVs like Teslas. Celgard's work in the lithium-ion  
7 battery industry has been highly praised, and Celgard has received numerous accolades for its work  
8 in the lithium-ion battery industry. Celgard's work in EVs in particular has been praised by  
9 numerous high-ranking officials, including former President Obama, former Secretary of  
10 Energy, Steven Chu, and former Secretary of Labor, Hilda Solis.

11 5. Such innovation is costly. Celgard has invested hundreds of millions of dollars to  
12 innovate its separators over the course of more than 30 years—through painstakingly long trial and  
13 error, improving each step of each process, each component of each composition, and even  
14 developing components of machinery used for the making of separators.

15 6. Celgard's significant investment requires protection, for example, of Celgard's  
16 patents. Celgard has diligently pursued and procured intellectual property rights both in the  
17 United States and internationally. Celgard owns more than 200 United States and international  
18 patents. Celgard invented a new separator for use in batteries and patented its inventions in United  
19 States Reissued Patent RE47,520 (the "'520 patent"), formerly United States Patent 6,432,586,  
20 entitled "Separator for a High Energy Rechargeable Lithium Battery." The '520 patent describes  
21 and claims a separator for a high-energy rechargeable lithium battery that addresses the significant  
22 problem of dendrite growth (irregular growth of lithium metal when it is plated onto an electrode  
23 during the charging of a battery between electrodes), as well as other problems. The '520 patent is  
24 recognized as being foundational in the separator field and has been cited in over 50 patents  
25 and patent applications; it will expire in April 2020. Celgard also owns United States Patent No.  
26 6,692,867 ("the '867 patent"), entitled "Battery Separator-Pin Removal" that is asserted in this  
27 action (collectively, the '520 patent and the '867 patent make up "the Asserted Patents"). A true  
28 and correct copy of the '520 patent is attached hereto as **Exhibit A**. A true and correct copy of the

1 '867 patent is attached hereto as **Exhibit B**.

2 7. Celgard's investment and protection of its investment has resulted in separators used  
3 in lithium-ion batteries that are safe and efficient and have undergone vigorous testing and  
4 optimization processes. As a result of its significant investment in developing its intellectual  
5 property, Celgard has become one of the top suppliers of separators for lithium-ion batteries in the  
6 world.

7 8. Shenzhen Senior Technology Material Co. Ltd. ("Senior-China"), a Chinese  
8 manufacturer of separators, together with its agents, alter-egos and/or related entities Senior-  
9 California, Sun Town and Global Venture (collectively, "Senior") has avoided the time-consuming  
10 and expensive process of developing its own separator technology and instead manufactures  
11 infringing separators.

12 9. Senior embarked on a scheme to take over the global separator market with an intent  
13 to eclipse Celgard. Their strategy was not based on fair competition, independent research and  
14 development, or their own advances in technology. Instead, Senior's strategy was to build a suite  
15 of products through unlawful theft and use of Celgard's intellectual property.

16 10. Senior accomplished its scheme by, among other things, hiring one of Celgard's  
17 lead scientists from North Carolina in October, 2016, Dr. Xiaomin (Steven) Zhang, who became  
18 an expert on separator membranes, resins, and production, over the course of more than a decade  
19 at Celgard.

20 11. When Dr. Zhang joined Senior, he assumed a pseudo-name in China, Dr. Bin Wang,  
21 so that Celgard would not be able to locate him. While at Senior, Dr. Zhang has used and continues  
22 to use Celgard's intellectual property to help Senior create infringing separators, such as coated and  
23 uncoated separators.

24 12. Celgard believes that Dr. Zhang has been working for Senior in some capacity,  
25 through Senior-China, Senior-California, Sun Town, and/or Global Venture at least as early as his  
26 departure from Celgard in 2016. Celgard further believes that Dr. Zhang and Senior (through one  
27 or more of the named entities) planned for Dr. Zhang to leave Celgard and work for Senior to create  
28 separators for Senior that had properties similar or the same as Celgard separators and with the

1 intent to take away business from Celgard.

2 13. Senior (including the named entities) is using Celgard's intellectual property to  
3 develop, make, use, import, offer to sell, and/or sell infringing separators. Farasis-US and Farasis-  
4 China assist and infringe Celgard's patents by incorporating the infringing separators into their  
5 products for sale in the United States and throughout the world.

6 14. On information and belief, Farasis (including each named entity) is a developer and  
7 supplier of lithium-ion battery technologies for a range of markets, including transportation, electric  
8 grid, and commercial and industrial vehicles. Farasis knowingly incorporates Senior's infringing  
9 separators into its own products, and perpetuates the harm to Celgard by selling products to its  
10 customers, such as Zero Motorcycles, Inc. ("Zero Motorcycles"). Accordingly, Farasis-US and  
11 Farasis-China assist and infringe Celgard's patents by incorporating the infringing separators into  
12 their products for sale in the United States and throughout the world.

13 15. Senior and Farasis have conspired to harm Celgard. At least Farasis Energy (Gan  
14 Zhou), Inc., Farasis Energy Inc., and Celgard previously had a long-standing business relationship  
15 together, with Celgard supplying its separators to Farasis' products.

16 16. Specifically, Celgard and Farasis Energy (Gan Zhou), Inc. had a supply agreement  
17 for Celgard to supply its separators to at least Farasis Energy (Gan Zhou), Inc., which was effective  
18 through March 31, 2019. In January 2019, during the term of the 2018 Supply Agreement, Farasis  
19 Energy (Gan Zhou), Inc. told Celgard it was ceasing purchases from Celgard, it refused to pay for  
20 specialized product already made for it, and announced it was going to purchase Senior-China's  
21 separators instead.

22 17. In January, 2019, Farasis Energy (Gan Zhou), Inc. and Senior-China entered into an  
23 arrangement for the supply of Senior-China's infringing separators. The result of this new  
24 arrangement with Senior-China was a breach of the 2018 Supply Agreement with Celgard.

25 18. As a result of Senior-China and Farasis Energy (Gan Zhou), Inc.'s conduct in  
26 replacing Celgard as the separator supplier, Celgard lost millions of business per year from Farasis  
27 Energy (Gan Zhou), Inc. and lost a then-valuable supply relationship. Further, Farasis was now  
28 using infringing separators in its products, such that Farasis was now infringing and continues to

1 infringe Celgard's patents, causing Celgard additional significant harm and providing Celgard's  
2 direct competitor with an economic and marketplace advantage.

3 19. Accordingly, Celgard has suffered and will continue to suffer great harm if Senior  
4 and Farasis are allowed to continue infringing Celgard's patents.

### 5 THE PARTIES

6 20. Celgard repeats and incorporates by reference all prior allegations of this Complaint  
7 as if fully set forth herein.

8 21. Celgard is a limited liability company organized and existing under the laws of  
9 Delaware, with its principal place of business located in Charlotte, North Carolina. Celgard is  
10 directly owned by Polypore International, LP, which is headquartered in Charlotte, North Carolina,  
11 and is indirectly owned by Asahi Kasei Corporation, which is headquartered in Japan.

12 22. Celgard is a U.S. manufacturer, has a broad portfolio of highly engineered products  
13 used in the battery industry, and is one of the largest suppliers of separators to the lithium-ion  
14 battery industry. Celgard has grown to be a global leader in the development and production of  
15 specialty microporous membranes, including separators used in rechargeable or secondary lithium-  
16 ion batteries for CE devices and EVs.

17 23. Senior-California is incorporated in the State of California, is registered to do  
18 business in the State of California, and has an office and research and development facility in the  
19 State of California, located at 44049 Fremont Blvd., Fremont, California, 94538.

20 24. Sun Town is incorporated in the State of California, is registered to do business in  
21 the State of California, and has an office located at 44063 Fremont Blvd., Fremont, California,  
22 94538.

23 25. At least as late as May 16, 2019, Sun Town was selling or offering to sell Senior-  
24 China's infringing separators to at least Celgard's consultant in California.

25 26. Global Venture Development, Inc. is incorporated in the State of California, is  
26 registered to do business in the State of California, and also has an office located at 44063 Fremont  
27 Blvd., Fremont, California, 94538.

28 27. Global Venture Development, LLC is a limited liability company organized and

1 existing under the laws of the State of California, is registered to do business in the State of  
2 California, and also has an office located at 44063 Fremont Blvd., Fremont, California, 94538.

3 28. Upon information and belief, Senior-China, Senior-California, Sun Town, Global  
4 Venture, and Dr. Zhang are conspiring together to develop, make, use, import, offer to sell, and/or  
5 sell the accused infringing products, including coated separators and uncoated separators that are  
6 manufactured by Senior-China to companies and institutions throughout the United States,  
7 including California. For example:

- 8 a. Dr. Zhang—the former Celgard employee who absconded with Celgard’s  
9 technology and proprietary information—is currently Chief Technology Officer of  
10 Senior-China, and had an address at the same location as Senior-  
11 California. Specifically, from April 2019 until August 2019, Dr. Zhang was located  
12 at 44063 Fremont Boulevard, Fremont, CA 94538.
- 13 b. Dr. Zhang’s listed phone number (510-573-6021) and business address (44063  
14 Fremont Boulevard) are the same as those for Global Venture.
- 15 c. Sun Town and Global Venture are located at the same address as Dr. Zhang and are  
16 in the same building as Senior-California.
- 17 d. Sun Town and Global Venture have connections with Senior-China and with Senior-  
18 California and, on information and belief, are companies to which Senior-  
19 California’s assets have been transferred.
- 20 e. Sun Town lists Mei-Guang Chen as its Finance Manager on its Statement of  
21 Information filed with California’s Secretary of State. Upon information and belief,  
22 Mei-Guang Chen also is Finance Manager for Senior-California.
- 23 f. Senior-China’s website says it has set up a Research and Development center in  
24 California and lists a telephone number for Senior-California. When this number is  
25 called, a pre-recorded message plays, saying “Hello, and thank you for calling Sun  
26 Town Technology.”
- 27 g. Sun Town’s Chief Executive Officer is Jian Chen. Jian Chen is also a director of  
28 other entities located at the same location as Global Venture, Senior-California, and



1 Dr. Zhang, such as Global PC Direct, GRJS LLC, and ST Cyberlink, also known as  
2 Global PC Direct.

3 h. Senior-China's annual reports from the Shenzhen Stock Exchange show that Senior-  
4 China set up Senior-California in January 2017 (around the time Dr. Zhang defected  
5 from Celgard) with registered capital of \$1M. The registered business nature of  
6 Senior-California is research and development and sales. The 2018 report shows  
7 that Senior-China invested approximately \$900 K to Senior-California.

8 i. Senior-California began dissolving in 2019. Upon information and belief, prior to  
9 dissolving, Senior-California transferred its assets to Global Venture and Sun Town  
10 for the purpose of Global Venture and Sun Town developing, making, using,  
11 importing, offering to sell and/or selling Senior-China's infringing separators  
12 throughout the United States, including California.

13 29. Upon information and belief, Sun Town, Global Venture and Senior-California are  
14 agents of Senior-China, affiliates of one another, and/or alter egos of one another.

15 30. Celgard respectfully submits that the factual allegations set forth herein concerning  
16 the relationships between Defendants have evidentiary support or will likely have evidentiary  
17 support after a reasonable opportunity for further investigation or discovery.

18 31. Farasis Energy USA, Inc. is incorporated in the State of California, is registered to  
19 do business in the State of California, and has an office located at 21363 Cabot Blvd., Hayward,  
20 California, 94545.

21 32. Farasis Energy, Inc. is incorporated in the State of California, is registered to do  
22 business in the State of California, and has an office located at 2118 Arthur Avenue, Belmont,  
23 California, 94002.

24 33. Farasis Energy (Gan Zhou), Inc. is a corporation organized and existing under the  
25 laws of China, with its principal place of business in Ganzhou, Jiangxi, China.

26 34. Farasis Energy (Gan Zhou), Co., Ltd. is a corporation organized and existing under  
27 the laws of China, with its principal place of business in Ganzhou, Jiangxi, China.

28 35. On information and belief, Farasis Energy, Inc. and Farasis Energy USA, Inc. are



1 the U.S. subsidiaries of Farasis Energy (Gan Zhou), Inc. and Farasis Energy (Gan Zhou), Co., Ltd,  
2 respectively.

3 36. Farasis-US and Farasis-China share senior personnel, for example, Dr. Yu Wang  
4 and Dr. Keith Kepler.

5 37. On information and belief, Dr. Keith Kepler is the Chief Technology Officer for  
6 Farasis Energy Inc. and is a controller, director, and member of the Board of Directors of Farasis  
7 Energy (Gan Zhou), Co., Ltd.

8 38. On information and belief, Dr. Kepler is also a director of Farasis Energy (Gan  
9 Zhou), Inc.

10 39. On information and belief, Dr. Yu Wang is the Chief Executive Officer of Farasis  
11 Energy, Inc. and the Chairman of the Board of Directors of Farasis Energy (Gan Zhou), Inc.

12 40. On information and belief, each Farasis entity is a developer and supplier of lithium-  
13 ion battery technologies for a range of markets, including transportation, electric grid, and  
14 commercial and industrial vehicles.

15 41. Each Farasis entity knowingly incorporates Senior's infringing separators into its  
16 own products, and perpetuates the harm to Celgard by providing these products to its customers,  
17 such as Zero Motorcycles. Accordingly, Farasis infringes Celgard's patents because it develops,  
18 makes, uses, imports, offers to sell, and sells products, including storage batteries, pouch cells,  
19 battery packs, and fuel systems that include, *inter alia*, the accused infringing separators, to  
20 companies and institutions throughout the United States, including the State of California.

21 42. As Farasis-China and Farasis-US share Dr. Yu Wang and Dr. Keith Kepler, based  
22 on information and belief, both Dr. Yu Wang and Dr. Keith Kepler (and thereby both Farasis-China  
23 and Farasis-US) knew details on the infringing Senior separators, their use by Farasis, the cells,  
24 batteries, and battery packs they were used to manufacture, the battery and battery pack customers,  
25 and the like.

26 43. Based on information and belief, Senior sampled and qualified the infringing  
27 separators with Farasis-US (the Farasis R&D facility).

28 44. Based on information and belief, Senior employees also visited the Farasis-China

1 manufacturing facilities where the infringing Senior separators are used to make cells or batteries.

2 45. Based on information and belief, Senior used Senior-California, Global Venture,  
3 and/or Sun Town's resources to visit Farasis-US facilities and to participate in meetings in the  
4 United States with Farasis, as well as BYD, Saft America, Inc., Zero Motorcycles, LG Chem, and  
5 the like.

6 46. Senior's US R&D is in Fremont, CA (city of Senior-California, Sun Town, and  
7 Global Venture) and Farasis's US R&D is in Hayward, CA (Farasis-US), which are in close  
8 proximity to each other.

9 47. On information and belief, Senior's Director of Sales and Marketing (based in  
10 Fremont, CA) attended the Advanced Automotive Battery Conference (AABC) and/or the  
11 International Battery Seminar & Exhibit in the US in 2019.

## 12 JURISDICTION AND VENUE

13 48. Celgard repeats and incorporates by reference all prior allegations of this Complaint  
14 as if fully set forth herein.

15 49. This Court has subject matter jurisdiction of the action pursuant to the patent laws  
16 of the United States, 35 U.S.C. § 1 *et seq.* and pursuant to 28 U.S.C. §§ 1331 and 1338(a) because  
17 Celgard's claims against each Defendant for patent infringement is a federal question. This Court  
18 also has supplemental jurisdiction over the other claims pursuant to 28 U.S.C. § 1367 because they  
19 are so related to the original claim that they form part of the same case or controversy.

20 50. This Court has personal jurisdiction over Global Venture, Sun Town, Senior-  
21 California, and Farasis-US because each is a California company, registered to business in  
22 California, with a principal place of business in this State and District.

23 51. This Court has personal jurisdiction over the Farasis-China Defendants pursuant to  
24 the United States Constitution, the California long-arm statute (i.e. California Code of Civil  
25 Procedure § 410.10), and/or Federal Rule of Civil Procedure 4(k)(2) (based off of Farasis-China's  
26 contacts with the United States as a whole), and/or any other applicable law.

27 52. Each Farasis-China Defendant has purposely directed activities in the United States,  
28 including California, and continues to purposefully direct activities in the United States, including

1 California, by regularly doing or soliciting business and engaging in other persistent, systematic  
2 courses of conduct and by knowingly injecting its infringing products into the stream of commerce  
3 with the knowledge and intent that those products will ultimately be imported into the United States  
4 and sold to, offered for sale to, and/or used by customers in California and throughout the United  
5 States.

6 53. For example, each named Farasis-China Defendant is in the business of developing,  
7 making, using, importing, offering to sell, and/or selling products in the United States, including  
8 California, that include the infringing products.

9 54. Specifically, based on importation records, Farasis Energy (Gan Zhou), Co., Ltd.  
10 has shipped lithium-ion batteries directly to Farasis Energy USA, Inc. in California. **Exhibit C.**  
11 Farasis Energy (Gan Zhou), Inc. has also shipped lithium-ion batteries directly to Farasis Energy,  
12 Inc. in California. **Exhibit D.**

13 55. On information and belief, Farasis-China's batteries either already have the  
14 infringing separator or the infringing separator is added by Farasis-US in California.

15 56. Additionally, based on Farasis-China's Initial Public Offering document, Farasis-  
16 China has received thousands of dollars in revenue from Farasis-US during at least 2016-2019,  
17 confirming Farasis-US sales in California.

18 57. Additionally, Farasis-US, located in California, is the R&D facility and U.S. sales  
19 facility for Farasis-China.

20 58. Additionally, on information and belief, Farasis-US and Farasis-China have  
21 overlapping senior personnel, such as Dr. Yu Wang and Dr. Keith Kepler.

22 59. Additionally, on information and belief, Farasis-China and Farasis-US batteries with  
23 the infringing separators are included in at least Zero Motorcycles, electric motorcycles that are  
24 sold throughout the United States, including in California. Zero Motorcycles' headquarters is  
25 located in Scotts Valley, California.

26 60. Based on information and belief, Senior sampled and qualified the infringing  
27 separators with Farasis-US (the Farasis R&D facility).

28 61. Additionally, based on publicly available importation records, Farasis Energy (Gan

1 Zhou), Inc has shipped its lithium-ion batteries containing the infringing separators, directly to Zero  
2 Motorcycles at its headquarters in Scotts Valley, California. **Exhibit E.** Farasis-China therefore  
3 knew or reasonably could have foreseen that a termination point of the infringing products would  
4 or could be the United States and California specifically.

5 62. To the extent that Farasis-China is not subject to personal jurisdiction in this or any  
6 other state's courts of general jurisdiction, this Court has personal jurisdiction over Farasis-China  
7 pursuant to Federal Rule of Civil Procedure 4(k)(2) based on Farasis-China's contacts with the  
8 United States as a whole, including its sales of its products throughout the United States and its  
9 supply contracts with Celgard, Senior-China, and downstream customers to supply products and  
10 sell products throughout the United States. For example, Farasis-China sells its batteries that  
11 include infringing separators to at least Zero Motorcycles, that are sold throughout the United  
12 States, including in California.

13 63. Venue is proper in this judicial district pursuant to 28 U.S.C. §§ 1391(b)-(c) and  
14 1400(b) because each Defendant has committed acts of patent infringement complained of herein  
15 in this District, and thus a substantial part of the events or omissions giving rise to the claims alleged  
16 herein occurred in this District, and because Defendants are each subject to this Court's personal  
17 jurisdiction with respect to the claims alleged herein. Further, Farasis Energy (Gan Zhou), Inc. and  
18 Farasis Energy (Gan Zhou), Co., Ltd. are Chinese (foreign) corporations and not residents in the  
19 United States and may be sued in any judicial district under 28 U.S.C. § 1391(c)(3). And, pursuant  
20 to 28 U.S.C. §1400(b), Sun Town, Global Venture, and Farasis-US reside in California, have  
21 committed acts of infringement, and each have a regular and established place of business in this  
22 District.

## 23 **FACTUAL ALLEGATIONS**

### 24 **A. Celgard and its Technology**

25 64. Celgard repeats and incorporates by reference all prior allegations of this Complaint  
26 as if fully set forth herein.

27 65. Celgard has a broad portfolio of highly engineered separators, including those that  
28 practice Celgard's patents, and is one of the largest suppliers of separators to the lithium-ion battery

1 industry. Celgard has invested hundreds of millions of dollars into research and development for  
2 new battery separator technologies and is an innovator in both coated and uncoated separators.

3 66. Celgard long has been recognized as a leading innovator in the battery separator  
4 market. Celgard's technology, its reputation, its market leadership, and its customer loyalty  
5 comprise a significant portion of Celgard's value.

6 67. Celgard's customers are predominantly companies that supply batteries (or cells) or  
7 battery packs (or modules) to manufacturers that produce CE devices, EVs, and energy storage  
8 systems, such as Farasis. EVs include both hybrid-EVs, like the Toyota Prius, and full-EVs, like  
9 Teslas.

10 68. In the past 20 years, rechargeable lithium-ion batteries became very popular for use  
11 in varying applications. Lithium-ion batteries provide a power source with a higher energy density,  
12 longer cycle life, and higher operational voltages with a relatively small size and light weight, as  
13 compared to other rechargeable batteries.

14 69. Lithium batteries are typically constructed with a thin porous insulating film (the  
15 separator) that allows the battery to operate but prevents the electrodes (cathode and anode) from  
16 contacting each other. Liquid electrolyte fills the pores in the separator and voids in the electrodes.  
17 When the battery is discharged, positively charged lithium ions flow in the electrolyte from the  
18 anode, through the separator pores, to the cathode. This process leaves a negative charge of  
19 electrons on the anode. When charging, the flow is reversed. In a rechargeable (secondary) lithium  
20 battery, the charge and discharge states are repeated during use. The process of charging and  
21 discharging the battery is referred to as one cycle.

22 70. A typical lithium-ion battery cell includes a positive electrode and a negative  
23 electrode that is divided by a separator or film, with the electrodes typically being made of  
24 compatible metal materials. The electrodes and film are often soaked in (and reside in) a liquid or  
25 liquid-like electrolyte. Lithium ions move through the electrolyte between the two electrodes when  
26 the battery is discharging its energy (e.g., when the battery is plugged into a device and energizing  
27 the device) and also when the battery is charging (e.g., when the battery is plugged into a charging  
28 station). The separator prevents direct contact between the electrodes. This is critical because the

1 touching of the two electrodes typically results in a “short” of the cell and possibly in catastrophic  
2 failure such as fire or explosion. Therefore, by providing a physical barrier between the electrodes,  
3 the separator facilitates safety and continued operation of the battery.

4 71. Separators made of various materials have been used over the years. As batteries  
5 have become more sophisticated, separator function also has become more demanding and  
6 complex.

7 72. Lithium batteries present certain unique safety challenges due to their chemical  
8 design and composition. One such challenge is lithium dendrite growth—the irregular growth of a  
9 metal on an electrode during charging or discharging. Over repetitive charge-discharge cycles,  
10 dendrites may grow out from the electrode’s surface in a needle-like structure. As the battery is  
11 cycled further, the dendrites may continue to grow, penetrating the separator and making direct,  
12 physical and electrical contact with the opposite electrode. When such contact is made, an electrical  
13 short circuit of the battery may occur. This may cause the battery to malfunction. In certain  
14 scenarios, it may cause the battery’s internal temperature to rise quickly and uncontrollably, leading  
15 to thermal runaway and catastrophic failure.

16 73. The battery industry has long identified dendrite growth (and associated electronic  
17 shorting) as a significant safety issue. Prior to the invention disclosed in the ’520 patent, however,  
18 solutions to the problem were varied and achieved mixed results.

19 74. Celgard invented the separator technology described and claimed in the ’520 patent  
20 to address safety and durability problems in lithium batteries. The separator claimed in claim 12 of  
21 the ’520 patent, for example, includes, among other things, (1) a ceramic composite layer (or  
22 coating) including a mixture of inorganic particles and a matrix material, and (2) a polyolefinic  
23 microporous layer. The claimed separator’s ceramic composite layer combines inorganic particles  
24 within a matrix material to create a ceramic composite layer adapted to at least block dendrite  
25 growth, which prevents electrical shorts, improving the safety and commercialization of high-  
26 energy lithium batteries. The claimed separator’s polyolefinic microporous layer is adapted to block  
27 ionic flow between the anode and cathode at an elevated temperature such as during thermal  
28 runaway. This shutdown functionality further improves battery safety.

1           75.     The '520 patent is based on a reissue application that was filed in 2015, issued in  
2     2019, and will expire on April 10, 2020. The '520 patent is a reissue of the 6,432,586 patent that  
3     was filed in 2000 and issued in 2002. Celgard is the owner by assignment of all right, title, and  
4     interest in and to the '520 patent, including the right to sue for past damages and injunctive relief.

5           76.     The Patent Office has confirmed the validity of claim 12 of the '520 patent after  
6     three *inter partes* review challenges. A true and correct copy of U.S. Patent No. 6,432,586 ("the  
7     '586 patent"), the predecessor patent to the '520 patent, complete with *Inter Partes* Review  
8     Certificate is attached hereto as **Exhibit F**. On June 3, 2019, the validity of claim 12 was yet again  
9     confirmed in the Notice of Allowance in the reissue application that matured into the '520 patent.

10          77.     Another of Celgard's inventions is an innovative way to remove a pin from a battery  
11     assembly. In the manufacture of high energy, lightweight batteries, for example, secondary lithium  
12     batteries, the battery assembly, i.e., an anode tape and a cathode tape sandwiching a separator tape,  
13     is wound about one or more pins (or cores or mandrels). To begin winding of the assembly, the  
14     separator tape is taken up on the pin, and then the anode and cathode tapes are fed to the pin. Upon  
15     completion of the winding, the battery assembly is removed (or withdrawn) from the pin. If the  
16     assembly (i.e., the separator tape) sticks on the pin during withdrawal, the assembly "telescopes"  
17     and must be rejected. Such rejects increase the cost of the battery manufacturing process. In  
18     response to this problem, Celgard invented various separator methods and separators having  
19     improved pin removal properties, i.e., separators that will not cause telescoping when the battery  
20     assembly is removed from the pin. These inventive separators and methods are claimed in the '867  
21     patent.

22          78.     Celgard is the owner by assignment of all right, title, and interest in and to the '867  
23     patent, including the right to sue for past damages and injunctive relief. The '867 patent was duly  
24     and legally issued by the United States Patent and Trademark Office on February 17, 2004, with  
25     all claims valid.

26          79.     Celgard has invested in significant intellectual property protection and vigorously  
27     enforces its patents. Celgard has been forced to enforce its intellectual property rights against other  
28     similar infringers, which ended in favorable outcomes to Celgard.



80. For example, in 2013, Celgard filed suit against Sumitomo Chemical Co., Ltd., in the United States District Court for the Western District of North Carolina for infringement of the '520 patent (or its predecessor, the '586 patent). The suit was resolved pursuant to agreement of the parties. The suit and its resolution were subject to at least national, industry-focused media coverage as shown in **Exhibit G** attached hereto.

81. In 2014, Celgard filed a patent infringement suit against LG Chem Ltd. and LG Chem America, Inc. (collectively, "LG Chem") in the United States District Court for the Western District of North Carolina for infringement of the '520 patent (or its predecessor, the '586 patent). The suit was resolved pursuant to agreement of the parties after significant district court litigation and patent office proceedings. The suit and its resolution were subject to at least national, industry-focused media coverage as shown in **Exhibit H** attached hereto.

82. In 2014, Celgard filed suit against SK Innovation Co., Ltd. ("SK Innovation") in the United States District Court for the Western District of North Carolina for infringement of the '520 patent (or its predecessor, the '586 patent). The suit was resolved pursuant to agreement of the parties after significant district court litigation and patent office proceedings. The suit and its resolution were subject to at least national, industry-focused media coverage as shown in **Exhibit I** attached hereto.

83. In December 2018, Celgard filed a patent infringement suit against MTI Corporation in the United States District Court for the Northern District of California for infringement of the '520 patent (or its predecessor, the '586 patent). *Celgard, LLC v. MTI Corporation*, No. 5:18-cv-07441-VKD (N.D. Cal. filed Dec. 11, 2018). The suit against MTI has settled and has been the subject of at least national and industry-focused media coverage. *See, e.g., Exhibit J.*

84. In May 2019, Celgard filed a patent infringement suit against Targray in the United States District Court for the Northern District of California for infringement of the '520 patent (or its predecessor, the '586 patent). *Celgard, LLC v. Targray Technology International Inc.*, No. 5:19-cv-02401-VKD (N.D. Cal. filed May 2, 2019). The suit against Targray has settled and has been the subject of at least national and industry-focused media coverage. *See, e.g., Exhibit K.*

85. At least as of February 25, 2019, Celgard provided notice to Senior-China about its

1 violation of Celgard's intellectual property, including infringement of the '520 patent (or its  
2 predecessor, the '586 patent).

3 86. At least as of November 12, 2019, Celgard provided notice to Farasis Energy Inc.  
4 about Senior-China's violation of Celgard's intellectual property, including infringement of the  
5 '520 and '867 patents.

6 **B. Market for Separators**

7 87. When customers select a separator for use in a battery, they often face competing  
8 issues. For example, a battery design that has a high energy density might have a poor cycle life.  
9 One of the most important competing issues is between energy density and safety. Particularly for  
10 batteries with high capacity (e.g., those used in EVs), a defect in a separator can lead to an unsafe  
11 event—such as a battery fire or explosion. Accordingly, while a battery designer might want to  
12 use a particularly thin separator to maximize energy density, a thin separator might be more  
13 susceptible to an unsafe condition than a thicker or coated separator.

14 88. Today, ceramic coated separators are increasingly common in the rechargeable  
15 (often large format) lithium batteries used in EVs and for other high-power applications. Much of  
16 the plug-in EV market in the U.S. has adopted ceramic coated separator technology. As the EV  
17 market continues to grow, an increasing percentage of manufacturers have turned to ceramic coated  
18 separators as a means to improve battery safety, battery cycle life, and vehicle driving range.

19 89. The market for plug-in EVs that use lithium-ion batteries, specifically, is rapidly  
20 expanding with an increasing number of makes and models available for sale. Vehicle  
21 manufacturers are rapidly increasing the number of available plug-in EVs as demand grows.

22 90. In the midst of this growth, vehicle manufacturers continue to explore options for  
23 increasing the per-charge EV driving range, often using, or making plans to use, a ceramic coated  
24 separator to achieve this objective. The success behind the growth of EVs is significantly correlated  
25 with longer per-charge driving range—a critical consumer criterion. The longer per-charge driving  
26 ranges now available in today's EVs are supported by very high energy density lithium-ion battery  
27 cells. The characteristics of these types of lithium-ion battery cells typically lead cell design  
28 engineers to specify ceramic coated separators to help address a balance between performance (i.e.,

1 longer per-charge driving range) and safety.

2 **C. Battery Separator Supply Chain and Competition**

3 91. Tiered supply chains are the rule in the EV and CE industries, where the final  
4 product consists of many complex components and sub-assemblies that must comply with  
5 stringent quality, manufacturing, and business standards. Celgard is an important member of the  
6 EV or CE tiered supply chain. As such, it typically supplies components to a battery supplier, who  
7 in turn supplies components directly to an original equipment manufacturer (OEM) that produces  
8 CE devices, EVs, or energy storage systems.

9 92. Competition for battery sales does not occur on a unit-by-unit basis. Rather, battery  
10 manufacturers compete to have EV or CE manufacturers or OEMs use their batteries for an entire  
11 product line. Supplying batteries and battery parts for EVs and CEs requires extensive testing and  
12 validation among the separator supplier, the battery manufacturer, and the EV or CE manufacturer.  
13 Once selected, the battery manufacturers “design in” a particular separator for that “generation”—  
14 i.e., that model’s production life cycle—which, for EVs, lasts from two to five years, or more.  
15 Because many batteries are designed to last for years, and because the ramifications of a battery  
16 fire or explosion are so dire, OEMs tend to stick with a battery design, and a particular separator,  
17 for a long time. The successful battery manufacturer (and separator manufacturer) thereby procures  
18 a blocking position that immunizes it from competition for several years.

19 93. Celgard’s experience in the EV market provides a good illustration. Celgard often  
20 collaborates with its customers and potential customers to provide highly-engineered and  
21 specifically-designed separators for each customer or potential customer’s requirements.  
22 Typically, the selling process for a separator requires a series of meetings between the  
23 separator supplier, the battery producer, and sometimes the OEM, where requirements are  
24 discussed, and sample separators are provided and evaluated. These sample separators may be  
25 tested as isolated units, or they may be built into working batteries. Following testing, the  
26 separator manufacturer may modify the separator, and the new separator and batteries built  
27 with it are retested. This iterative process can continue for months or even years, and it can  
28 continue through the approval process, and even can be used to make continuous

1 improvements to the product after it is launched.

2 94. Over time, relationships are developed among the supplier, the tiered customer and  
3 the OEM at many levels during this process. Supplying components for an EV creates a familiarity  
4 and confidence that yields an “incumbency effect” that can carry over from one design cycle to the  
5 next. “Incumbency effect” increases the likelihood that the tiered suppliers and OEM will continue  
6 to harvest their initial investment through future contracts. Furthermore, through its experience in  
7 the EV industry, Celgard has learned that OEMs are more likely to look to their current suppliers  
8 for future designs, rather than to suppliers to which the OEMs have not already awarded business,  
9 and other OEMs are more likely to select suppliers they know. All of this results in a strong  
10 competitive advantage for existing suppliers.

11 **D. The Emerging Market in China for Separators**

12 95. The Chinese government is seeking to have China become the global leader in  
13 lithium-ion battery technology, as well as the leader in EV technology. To facilitate these  
14 goals, the Chinese government provides subsidies for EVs, which in turn has caused demand  
15 for lithium-ion batteries to grow. According to market research, there are over 75 competing  
16 Chinese companies that are positioned to provide lithium-ion batteries with ceramic coated  
17 separators with many more attempting to enter the market, including international  
18 manufacturers that must either meet strict standards or partner with a Chinese company. To  
19 accommodate the increased demand for battery cells (and separators), Chinese manufacturers are  
20 adding large numbers of production lines for separators, raising the total manufacturing capability  
21 to over 1 billion square meter (m<sup>2</sup>) per year of separators.

22 96. Receipt of subsidies from the Chinese government is conditioned on meeting certain  
23 requirements, including a minimum energy density for the batteries installed in the EV. Thus, as  
24 with other EV manufacturers, Chinese EV manufacturers have continued to explore options for  
25 increasing the per-charge driving range of EVs.

26 97. With large production capabilities and government subsidies, Chinese battery  
27 manufacturers (like Farasis-China) and Chinese separator manufacturers (like Senior-China), can  
28 significantly discount the prices of their products, including separators and batteries.

1           98.     One such company that manufactures coated and uncoated separators, including  
2 separators in China and significantly discounts prices for its separators is Senior-China.

3           **E.     Senior’s Violation of Celgard’s Intellectual Property Rights**

4           99.     As a result of its considerable investment in its intellectual property, Celgard has  
5 gained a distinct, commercial and economic advantage in the separator market that has resulted in  
6 substantial sales and market share for its products.

7           100.    Senior has embarked on a scheme to harm Celgard by violating its intellectual  
8 property rights. As part of that scheme, Senior hired former Celgard employee, Dr. Zhang. Dr.  
9 Zhang was employed by Celgard from 2005 until 2016 and, during that time, held a number of  
10 positions, was part of the R&D department and function, and was an expert at Celgard in at least  
11 resins, polymers, membranes, base films, and process and production technology.

12           101.    During his time at Celgard, Dr. Zhang was an inventor or co-inventor on a number  
13 of Celgard patents, and was extensively and intimately involved with Celgard’s separators’ design,  
14 development, and production. As a result, Dr. Zhang has unique, detailed, and extensive knowledge  
15 of Celgard’s patented technology.

16           102.    Dr. Zhang left Celgard in October, 2016 and lied and said he was going to work for  
17 General Electric. However, Celgard later learned that Dr. Zhang joined Senior as its CTO in 2017  
18 and changed his name to “Bin Wang” specifically so that he could hide from Celgard. Dr. Zhang  
19 retained an office in California at the same address as Sun Town, Global Venture, and in the same  
20 building as Senior-California.

21           103.    Celgard had asked Senior in the summer of 2018 whether Dr. Zhang worked at  
22 Senior, and Senior said no. Continuing the lie, in early 2019, Dr. Zhang called Celgard, stating he  
23 was not “technically” working for Senior and that he was not working on separator-related  
24 technology for Senior. He stated he was instead working on technology such as reverse-osmosis.  
25 Recently, having been caught in a lie, Senior admitted it had requested Dr. Zhang to change his  
26 name to avoid Celgard’s detection and had named Dr. Zhang its CTO beginning in 2017. Further,  
27 Dr. Zhang has been working on Senior’s separator technology despite his assertions to Celgard to  
28 the contrary.

104. Celgard believes that Dr. Zhang has been working for Senior in some capacity, through Senior-China, Senior-California, Sun Town, and/or Global Venture, at least as early as his departure from Celgard in 2016. Celgard further believes that Dr. Zhang and Senior (through one or more of the named entities) planned for Dr. Zhang to leave Celgard and work for Senior with the intent that Dr. Zhang create infringing separators for Senior and with the intent to take away business from Celgard.

105. On February 25, 2019, after Celgard learned that Dr. Zhang was working at Senior, Celgard sent a letter to Senior-China explaining, among other things, that Senior-China infringed at least the '520 patent (or its predecessor, the '586 patent). Senior-China dismissed the letter and never formally responded.

106. Celgard believes Senior hired Dr. Zhang for the specific purpose of using his knowledge of Celgard's patented technology to help Senior develop its infringing separators and to capitalize on his prior relationship and confidential knowledge about Celgard's customers. By unlawfully creating infringing separators, Senior was intentionally attempting to drive Celgard out of the market.

107. After creating infringing separators, Senior's global market share increased.

108. Senior's (and Farasis') infringement of the Asserted Patents and other wrongdoing has caused and will continue to cause Celgard to lose sales, customers, reputation, and market share for its products and thereby has caused and will continue to cause Celgard significant pecuniary harm for which it seeks injunctive relief and monetary damages and relief in an amount to be determined at trial.

109. Celgard has been and will continue to be irreparably harmed by Defendants infringing and unlawful activities.

#### **F. Infringing Products**

110. All of the Defendants are aware of Celgard and its products, including Celgard's separator products.

111. Senior-China manufactures ceramic coated lithium-ion battery separators, including, but not limited to, those sold under at least the series designations SH, MCS, and MFS,

those sold under at least the grades SH216, SH416, SH220, SH225, and SH230, and those sold under at least the model numbers SH420D14, SH420D22, SH416W14, SH416W22, SH216D14, SH216D22, SW312F (SH716W14, SH716W22), SW316E (SH220W14, SH220W22), SW320H (SH624W14, SH624W22), SH816D14, SH816D22, SH216Z14, SH216Z22, SH220D14, SH220D22, SH620D14, SH620D22, SH620T14, SH320Z14, SH224D14, SH224D22, SH624D14, SH624Z14, SH229D14, SH229D22, YV218D51A, YV718W51A, YT623D44A, and YT413W22.

112. Senior-China manufactures uncoated polypropylene lithium-ion battery separators, including, but not limited to, those sold under at least the series designations SD, SQ, ST, and SZ, those sold at various thicknesses and porosity values, and those sold under at least the model numbers SD216C, SD216101, SD216001, SD216201, SD216E, SD216301, SD220C, SD220001, SD220101, SD422201, SD220201, SD425201, SD425301, SD425401, SD432101, SD432201, SD432301, SD440201, SD440301, SQ212D, SD212202, SQ212F, SD214202, SQ214E, SD216102, SQ216C, SD216202, SD220102, SD220202, SD220202 (double layers), SD425202, SD460201, ST212D, ST212F, ST214C, ST216D, ST216E, ST218D, ST218F, ST420C, ST420E, and SZ212202.

113. These products are sold by each Defendant (and/or through its subsidiaries, divisions, affiliates, or groups).

114. Targray, a U.S. Distributor of Senior's products, for example, states of Senior's products that "[t]he latest addition to Targray's line of battery separators, our ceramic separators delivers an exceptional combination of safety, temperature performance and life cycle for lithium-ion battery manufacturers and R&D facilities. Given their rigorous safety and performance features, our ceramic separators are ideally suited for advanced li-ion battery applications, namely electric vehicles and energy storage systems."<sup>1</sup>

115. Senior's SH416W14 and SH416W22 separators are ceramic-coated wet process polyethylene separators, which "are also available with aluminum oxide ceramic coating to further

<sup>1</sup> <https://www.targray.com/li-ion-battery/separators/ceramic-separators> (last accessed April 5, 2019), attached as **Exhibit L**.



1 enhance safety characteristics.”<sup>2</sup>

2 116. Senior’s SH216D14 and SH216D22 separators are “ceramic-coated dry process  
3 ceramic separators,” which “are also available with aluminum oxide ceramic coating to further  
4 enhance safety characteristics.”<sup>3</sup>

5 117. Senior’s SH416W22 and SH216D22 are the double-side coated versions of  
6 SH416W14 and SH216D14, respectively.

7 118. At least Senior’s SH416W14, SH416W22, SH216D14, and SH216D22 separators<sup>4</sup>  
8 infringe at least Claim 12 of the ’520 patent. Claim 12 of the ’520 patent recites:

9 A separator for an energy storage system comprises:

10 at least one ceramic composite layer or coating, said layer including  
11 a mixture of 20-95% by weight of inorganic particles selected from  
12 the group consisting of SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, CaCO<sub>3</sub>, TiO<sub>2</sub>, SiS<sub>2</sub>, SiPO<sub>4</sub>, and  
13 mixtures thereof, and 5-80% by weight of a matrix material selected  
14 from the group consisting of polyethylene oxide, polyvinylidene  
15 fluoride, polytetrafluoroethylene, copolymers of the foregoing, and  
16 mixtures thereof, said layer being adapted to at least block dendrite  
growth and to prevent electronic shorting; and

17 at least one polyolefinic microporous layer having a porosity in the  
18 range of 20-80%, an average pore size in the range of 0.02 to 2  
19 microns, and a Gurley Number in the range of 15 to 150 sec, said layer  
20 being adapted to block ionic flow between an anode and a cathode.

21 119. The above-identified Senior ceramic coated separators comprise a ceramic  
22 composite layer or coating composed of inorganic particles of the nature and weight percentage (or  
23 the equivalent thereto) set forth in Claim 12 of the ’520 patent. These Senior ceramic coated  
24 separator products have an “aluminum oxide ceramic coating to further enhance safety  
25 characteristics.”<sup>5</sup>

26 120. The above-identified Senior ceramic coated separators comprise a ceramic  
27 composite layer or coating composed of a matrix material of the nature and weight percentage (or  
28 the equivalent thereto) set forth in Claim 12 of the ’520 patent.

<sup>2</sup> “High-performance Separators,” Targray—Battery Division, attached as **Exhibit M**, at 6.

<sup>3</sup> *Id.*

<sup>4</sup> Further investigation may reveal that other ceramic coated separators from Senior-China and/or Senior-California also directly or indirectly infringe Claim 12 (or other claims) of the ’520 patent.

<sup>5</sup> *Id.*

121. The above-identified Senior ceramic coated separators comprise a ceramic composite layer that is “adapted to at least block dendrite growth and to prevent electronic shorting,” as set forth in Claim 12 of the ’520 patent. On its website, Targray (Senior’s distributor) acknowledged that these Senior “battery separators must be able to withstand penetration and branching moss-like crystalline minerals in order to prevent the contamination of electrodes. If the separator material is compromised, the performance of the high-power cell declines.”<sup>6</sup>

122. The above-identified Senior ceramic coated separators comprise a polyolefinic microporous layer having porosity, average pore size, and Gurley Number measurements within the ranges (or the equivalents thereto) set forth in Claim 12 of the ’520 patent.

123. The above-identified Senior ceramic coated separators comprise a polyolefinic microporous layer that is “adapted to block ionic flow between an anode and a cathode,” as set forth in Claim 12 of the ’520 patent.

124. Further, at least Senior’s SD216C, SH420D14, SH420D22, SH320D14, SD216101, SD216001, SD216201, SH216D14, and SH216D22 separators<sup>7</sup> infringe at least Claims 17 and 18 of the ’867 patent. Claim 17 of the ’867 patent, for example, recites:

A battery separator with improved pin removal properties comprising:

a microporous membrane having a polypropylene surface portion including at least 50 ppm of a metallic stearate.

125. The above-identified Senior separators comprise a microporous membrane having a polypropylene surface portion including at least 50 ppm of a metallic stearate.

126. Upon information and belief, one or more of the separators identified above by model number has been purchased and used by Farasis in its batteries, and resold as part of its batteries.

#### **G. Farasis’ Breach of the Supply Agreement with Celgard**

127. At least Farasis Energy (Gan Zhou), Inc., Farasis Energy Inc., and Celgard

<sup>6</sup> <https://www.targray.com/li-ion-battery/separators> (last accessed Apr. 9, 2019), attached hereto as **Exhibit N**.

<sup>7</sup> Further investigation may reveal that other Senior coated or uncoated separators also directly or indirectly infringe at least Claim 17, or even other claims, of the ’867 patent.

1 previously had a long-standing business relationship together, with Celgard supplying its separators  
2 for Farasis' products.

3 128. For example, on or around April 26, 2017, Celgard had entered into a Memorandum  
4 of Understanding ("MOU") with Farasis Energy Inc. The MOU demonstrated Celgard's and  
5 Farasis Energy Inc.'s intent to form and operate a joint venture in China for the manufacture of  
6 ceramic coated separators (having Celgard base films) for use in Farasis' lithium-ion batteries. The  
7 MOU is signed by the Vice President of Research for Farasis Energy (Gan Zhou), Inc. A preceding  
8 2016 Letter Agreement explains the parties as "FARASIS ENERGY, INC. (for Farasis, and for  
9 Farasis USA)" as well as "FARASIS ENERGY (GANZHOU) INC. (for FARASIS China)."   
10 Celgard alleges that both Farasis Energy Inc. and Farasis Energy (Gan Zhou), Inc. are parties to the  
11 2017 MOU.

12 129. Further, since 2015, Farasis Energy (Gan Zhou), Inc. and Celgard have had a supply  
13 agreement. On or around May 4, 2018, Celgard and Farasis Energy (Gan Zhou), Inc. entered into  
14 the latest supply agreement ("2018 Supply Agreement"). The 2018 Supply Agreement is a valid  
15 and binding agreement for Celgard to be the provider of separators to at least Farasis Energy (Gan  
16 Zhou), Inc.

17 130. The 2018 Supply Agreement was effective through March 31, 2019, and included a  
18 provision that during the contract term, Buyer (Farasis Energy (Gan Zhou), Inc.) agreed to purchase  
19 certain Celgard separator products from Seller (Celgard) of a certain specified amount through  
20 March 31, 2019.

21 131. In January 2019, during the term of the 2018 Supply Agreement, Farasis Energy  
22 (Gan Zhou), Inc. told Celgard it was ceasing purchases from Celgard, it refused to pay for  
23 specialized product already made for it, and announced it was going to purchase Senior-China's  
24 separators instead.

25 132. Upon information and belief, on or around January 1, 2019, Farasis Energy (Gan  
26 Zhou), Inc. and Senior-China entered into a supply agreement for Senior-China to supply infringing  
27 separators to Farasis Energy (Gan Zhou), Inc. That contract was during the term of the 2018 Supply  
28 Agreement, pursuant to which Farasis Energy (Gan Zhou), Inc. was to be purchasing certain

1 Celgard separators at contracted minimum quantities. The result of this new arrangement with  
2 Senior-China was a breach of the 2018 Supply Agreement.

3 133. As a result of Senior-China and Farasis Energy (Gan Zhou), Inc.'s conduct in  
4 replacing Celgard as the separator supplier, Celgard lost millions of m2 of business per year from  
5 Farasis Energy (Gan Zhou), Inc. and lost a then-valuable supply relationship. Further, Farasis was  
6 now using infringing separators in its products, such that Farasis was now infringing and continues  
7 to infringe Celgard's patents, causing Celgard additional significant harm.

### 8 **FIRST CLAIM FOR RELIEF**

#### 9 **Infringement of the '520 patent**

10 134. Celgard repeats and incorporates by reference all prior allegations of this Complaint  
11 as if fully set forth herein.

12 135. Celgard is the owner by assignment of all rights, title, and interest in and to the '520  
13 patent.

14 136. The '520 patent is valid and enforceable.

15 137. Upon information and belief, and in violation of 35 U.S.C. § 271(a), each Defendant  
16 has infringed and continues to infringe at least Claim 12 of the '520 patent by making, using,  
17 offering for sale, selling, and/or importing in or into the United States ceramic coated separators  
18 covered by at least Claim 12 of the '520 patent, including, but not limited to, at least Senior's  
19 ceramic coated separators identified above by model number.

20 138. Specifically, upon information and belief, by example, and in violation of 35 U.S.C.  
21 § 271(a), Senior-California, Global Venture, and Sun Town has infringed and continues to infringe  
22 at least Claim 12 of the '520 patent by making, using, offering for sale, selling, and/or importing in  
23 or into the United States ceramic coated separators covered by at least Claim 12 of the '520 patent,  
24 including, but not limited to, at least Senior's ceramic coated separators identified above by model  
25 number.

26 139. Specifically, upon information and belief, by example, and in violation of 35 U.S.C.  
27 § 271(a), each Farasis-US and Farasis-China Defendant has infringed and continues to infringe at  
28 least Claim 12 of the '520 patent by making, using, offering for sale, selling, and/or importing in

1 or into the United States products, including storage batteries, pouch cells, battery packs, and fuel  
2 systems that include, *inter alia*, Senior's ceramic coated separators identified above by model  
3 number.

4 140. As a direct and proximate result of Defendants' infringement of the '520 Patent,  
5 Celgard has been injured and has been caused significant harm and financial damages.

6 141. Upon information and belief, Senior-California and at least Sun Town and Global  
7 Venture have also induced and continue to induce infringement of at least Claim 12 of the '520  
8 patent in violation of 35 U.S.C. § 271(b).

9 142. Senior-California and at least Sun Town and Global Venture induce their customers,  
10 purchasers, users, and/or developers of Senior's separators, such as Farasis, to infringe at least  
11 Claim 12 of the '520 patent (or its predecessor, the '586 patent), and do so with specific intent, by  
12 providing instructions, directions, information, and/or knowledge on how to use their separators,  
13 and/or incorporate their separators into other products.

14 143. Senior-California and at least Sun Town and Global Venture have had knowledge  
15 of the '520 patent (or its predecessor, the '586 patent) at least as early as February 25, 2019. Farasis  
16 Energy Inc. has had actual knowledge of the '520 patent at least as early as November 12, 2019.  
17 The other Defendants have had actual knowledge of the '520 patent as least as early as December  
18 12, 2019, the date of the First Amended Complaint. Nevertheless, Senior-California and at least  
19 Sun Town and Global Venture have continued to induce their customers, purchasers, users, and/or  
20 developers, such as Farasis, to infringe. They do so through documentation accompanying Senior's  
21 separators, technical support, advertisements, datasheets, demonstrations, and/or tutorials.

22 144. As a direct and proximate result of Senior-California, Sun Town, and Global  
23 Venture's induced infringement of the '520 Patent, Celgard has been injured and has been caused  
24 significant harm and financial damages.

25 145. Upon information and belief, each Defendant, without Celgard's permission, has  
26 been and is presently infringing at least Claim 12 of the '520 patent in violation of 35 U.S.C.  
27 § 271(c), by selling or offering to sell material or apparatuses for use in practicing the '520 patent  
28 (and its predecessor, the '586 patent) that are a material part of the invention to their customers,

1 purchasers, users, and/or developers.

2 146. The components sold or offered for sale by Defendants have no substantial non-  
3 infringing uses. Further, they are not staple articles of commerce and constitute a material part of  
4 the invention. Thus, Defendants knew or should have known that the products for which their  
5 components were made was protected by the '520 patent (and its predecessor, the '586 patent), and  
6 yet Defendants infringed upon the '520 patent in spite of this knowledge.

7 147. As such, each Defendant has contributorily infringed and continues to infringe the  
8 '520 patent, as set forth herein, knowing that the materials or components would be made or adapted  
9 for use in an infringing manner.

10 148. Defendants' infringing acts have been and are the actual and proximate cause of  
11 damage to Celgard, and Celgard has sustained damages and harm and will continue to sustain  
12 damages and harm as a result of Defendants' infringement of the '520 patent (and its predecessor,  
13 the '586 patent).

14 149. Defendants continued infringement after having knowledge of the patents is in spite  
15 of the objectively high likelihood that their activities constitute infringement of a valid patent, and  
16 this risk was either known or so obvious that it should have been known to Defendants. Thus,  
17 Defendants' continued infringement at least as of these dates is willful and deliberate.

18 150. Products that are believed to contain infringing Senior-China separators include at  
19 least Farasis-China's and Farasis-US's storage batteries, pouch cells, battery packs, and fuel  
20 systems, which are offered for sale and sold to manufacturers such as Zero Motorcycles.

21 151. Celgard has suffered and continues to suffer damages and irreparable harm as a  
22 result of Defendants' past and ongoing infringement. Unless and until Defendants' infringement is  
23 enjoined, Celgard will continue to be damaged and irreparably harmed.

24 152. Celgard is entitled to all remedies at law and equity, including, but not limited to, an  
25 injunction against Defendants' infringement of the '520 patent pursuant to 35 U.S.C. § 283.

26 153. Celgard is entitled to damages for Defendants' infringement of the '520 patent,  
27 including, but not limited to, damages pursuant to 35 U.S.C. §§ 284, 285.  
28

**SECOND CLAIM FOR RELIEF****Infringement of the '867 patent**

154. Celgard repeats and incorporates by reference all prior allegations of this Complaint as if fully set forth herein.

155. Celgard is the owner by assignment of all rights, title, and interest in and to the '867 patent.

156. The '867 patent is valid and enforceable.

157. Upon information and belief, and in violation of 35 U.S.C. § 271(a), each Defendant has infringed and continues to infringe at least Claims 17 and 18 of the '867 patent by making, using, offering for sale, selling, and/or importing in or into the United States separators covered by at least Claims 17 and 18 of the '867 patent, including, but not limited to, at least Senior-China's separators identified above by model number.

158. Specifically, upon information and belief, for example, and in violation of 35 U.S.C. § 271(a), Senior-California, Global Venture, and Sun Town has infringed and continues to infringe at least Claims 17 and 18 of the '867 patent by making, using, offering for sale, selling, and/or importing in or into the United States separators covered by at least Claims 17 and 18 of the '867 patent, including, but not limited to, at least Senior-China's separators identified above by model number.

159. Specifically, upon information and belief, for example, and in violation of 35 U.S.C. § 271(a), each Farasis-US and Farasis-China Defendant has infringed and continues to infringe at Claims 17 and 18 of the '867 patent by making, using, offering for sale, selling, and/or importing in or into the United States products, including storage batteries, pouch cells, battery packs, and fuel systems that include, *inter alia*, at least Senior-China's separators identified above by model number.

160. As a direct and proximate result of each of Defendant's infringement of the '867 Patent, Celgard has been injured and has been caused significant harm and financial damages.

161. Upon information and belief, Senior-California, Sun Town and Global Venture have also induced and continue to induce infringement of at least Claims 17 and 18 of the '867 patent in



1 violation of 35 U.S.C. § 271(b).

2 162. Senior-California, Sun Town and Global Venture induce their customers,  
3 purchasers, users, and/or developers of their separators to infringe at least Claims 17 and 18 of the  
4 '867 patent, and do so with specific intent, by providing instructions, directions, information, and/or  
5 knowledge on how to use their separators, and/or incorporate their separators into other products.

6 163. Senior-California, Sun Town and Global Venture have had knowledge of the '867  
7 patent at least as early as September 16, 2019. Farasis Energy Inc. has had actual knowledge of the  
8 '867 patent at least as early as November 12, 2019. The other Defendants have had actual  
9 knowledge of the '867 patent at least as early as December 12, 2019, the date of the First Amended  
10 Complaint. Nevertheless, Senior, Sun Town and Global Venture have continued to induce their  
11 customers, purchasers, users, and/or developers to infringe. They do so through documentation  
12 accompanying their separators, their technical support, advertisements, datasheets, demonstrations,  
13 and/or tutorials.

14 164. As a direct and proximate result of Senior-California's, Sun Town's and Global  
15 Venture's induced infringement of the '867 Patent, Celgard has been injured and has been caused  
16 significant harm and financial damages.

17 165. Upon information and belief, each Defendant, without Celgard's permission, has  
18 been and is presently infringing at least Claims 17 and 18 of the '867 patent in violation of 35  
19 U.S.C. § 271(c), by selling or offering to sell material or apparatuses for use in practicing the '867  
20 patent that is a material part of the invention to their customers, purchasers, users, and/or  
21 developers.

22 166. The components sold or offered for sale by each Defendant has no substantial non-  
23 infringing uses. Further, they are not staple articles of commerce and constitute a material part of  
24 the invention. Thus, each Defendant knew or should have known that the combination for which  
25 their components were made was protected by the '867 patent and yet Defendants infringed upon  
26 the '867 patent in spite of this knowledge.

27 167. As such, Defendants have contributorily infringed and continue to infringe the '867  
28 patent, as set forth herein, knowing that the materials or components would be made or adapted for

1 use in an infringing manner.

2 168. Defendants continued infringement on or after knowledge of the '867 patent is in  
3 spite of the objectively high likelihood that their activities constitute infringement of a valid patent,  
4 and this risk was either known or so obvious that it should have been known to Defendants. Thus,  
5 Defendants' continued infringement at least as of the filing of the Complaint is willful and  
6 deliberate.

7 169. Products that are believed to contain infringing Senior-China separators include at  
8 least Farasis-China's and Farasis-US's storage batteries, pouch cells, battery packs, and fuel  
9 systems, which are offered for sale and sold to manufacturers such as Zero Motorcycles.

10 170. Celgard has suffered and continues to suffer damages and irreparable harm as a  
11 result of Defendants' past and ongoing infringement. Unless and until Defendants' infringement is  
12 enjoined, Celgard will continue to be damaged and irreparably harmed.

13 171. Celgard is entitled to all remedies at law and equity, including, but not limited to, an  
14 injunction against Defendants' infringement of the '867 patent pursuant to 35 U.S.C. § 283.

15 172. Celgard is entitled to damages for Defendants' infringement of the '867 patent,  
16 including, but not limited to, damages pursuant to 35 U.S.C. §§ 284, 285.

### 17 **THIRD CLAIM FOR RELIEF**

#### 18 **Breach of Contract**

19 173. Celgard repeats and incorporates by reference all prior allegations of this Complaint  
20 as if fully set forth herein.

21 174. The 2018 Supply Agreement between Celgard and Farasis Energy (Gan Zhou), Inc.  
22 is a valid and enforceable contract.

23 175. The parties knowingly and willingly entered into the 2018 Supply Agreement.

24 176. Celgard has performed all of its material obligations under the 2018 Supply  
25 Agreement.

26 177. The 2018 Supply Agreement was effective through March 31, 2019, and included a  
27 provision that during the contract term, Buyer (Farasis Energy (Gan Zhou), Inc.) agreed to purchase  
28 certain Celgard separator products from Seller (Celgard) of a certain specified amount through

1 March 31, 2019.

2 178. In January 2019, during the term of the 2018 Supply Agreement, Farasis Energy  
3 (Gan Zhou), Inc. told Celgard it was ceasing purchases from Celgard, it refused to pay for  
4 specialized product already made for it, and announced it was going to purchase Senior-China's  
5 separators instead.

6 179. At least in or about January 2019, therefore Farasis Energy (Gan Zhou), Inc.  
7 unilaterally terminated the 2018 Supply Agreement without prior written notice, and without  
8 paying for all goods and services it received thereunder, and all amounts due and owing thereunder.

9 180. Upon information and belief, on or around January 1, 2019, Farasis Energy (Gan  
10 Zhou), Inc. and Senior-China entered into an arrangement for Senior-China to supply infringing  
11 separators to Farasis. That contract was during the term of the 2018 Supply Agreement, pursuant  
12 to which at least Farasis Energy (Gan Zhou), Inc. was to be purchasing certain Celgard separators  
13 at contracted minimum quantities. The result of this new arrangement with Senior-China was a  
14 breach of the 2018 Supply Agreement.

15 181. As a result of Farasis Energy (Gan Zhou), Inc.'s breach, Celgard lost millions of m2  
16 of business per year.

17 182. Accordingly, as a direct and proximate cause of Farasis Energy (Gan Zhou), Inc.'s  
18 contractual breaches, Celgard has suffered and continues to suffer immediate and irreparable injury,  
19 loss, harm, or damage, and will continue to suffer said injury, loss, harm, or damage.

20 183. Celgard is entitled to recover such damages in an amount to be proven at trial. As a  
21 direct and proximate result of Farasis Energy (Gan Zhou), Inc.'s contractual breaches, Celgard has  
22 suffered additional damages.

#### 23 **FOURTH CLAIM FOR RELIEF**

##### 24 **Breach of Implied Covenant of Good Faith and Fair Dealing**

25 184. Celgard repeats and incorporates by reference all prior allegations of this Complaint  
26 as if fully set forth herein.

27 185. The 2018 Supply Agreement between Celgard and Farasis Energy (Gan Zhou), Inc.  
28 contains implied covenants by the parties to act in good faith and deal fairly with each other.

186. Farasis Energy (Gan Zhou), Inc. had an implied covenant to act in good faith and fair dealing and not enter into a financial arrangement with a direct competitor that would place Celgard at an economic and marketplace disadvantage. Yet, Farasis Energy (Gan Zhou), Inc. intentionally terminated the 2018 Supply Agreement with Celgard without notice and entered into a financial arrangement with Senior-China—Celgard’s direct competitor. Such conduct has provided and is providing Senior-China with an economic and marketplace advantage.

187. Farasis Energy (Gan Zhou), Inc. therefore violated, and continues to violate, the 2018 Supply Agreement’s implied covenant of good faith and fair dealing by terminating the agreement to enter into a financial arrangement with Celgard’s direct competitor, which provides Senior-China with an economic and marketplace advantage.

188. This breach of implied covenant of good faith and fair dealing has caused, and continues to cause, Celgard to suffer substantial monetary damages, in an amount to be determined at trial, as well as monetary damages that cannot be calculated, and irreparable harm to its reputation and goodwill.

### **JURY DEMAND**

Pursuant to Civ. L.R. 3-6 and Fed. R. Civ. P. 38, Celgard hereby requests a trial by jury.

### **REQUEST FOR RELIEF**

Celgard respectfully asks that the Court enter judgment in its favor as follows:

- A. Judgment in favor of Celgard and against Defendants on each cause of action alleged herein;
- B. Finding that Defendants have infringed and are presently infringing the Asserted Patents;
- C. Finding that Defendants’ infringement of the Asserted Patents has been and continues to be willful;
- D. Awarding Celgard damages adequate to compensate it for Defendants’ past and present infringement, but in no event less than a reasonable royalty;

- 1 E. Awarding an accounting and supplemental damages for those acts of infringement
- 2 committed by Defendants subsequent to the discovery cut-off date in this action
- 3 through the date Final Judgment is entered;
- 4 F. Ordering that damages for infringement of the Asserted Patent(s) be trebled as
- 5 provided for by 35 U.S.C. § 284 for Defendants' willful infringement of the
- 6 Asserted Patents;
- 7 G. That Celgard be awarded its full actual and consequential damages according to
- 8 proof at trial;
- 9 H. That Celgard be awarded Defendants' restitution to the fullest extent available
- 10 under applicable law;
- 11 I. That Celgard be awarded punitive, enhanced, and/or exemplary damages,
- 12 including but not limited to at least doubled damages under Cal. Civ. Code Section
- 13 3426, to the fullest extent available under applicable law;
- 14 J. Finding that this case is exceptional;
- 15 K. Awarding Celgard its attorneys' fees and costs, together with prejudgment and
- 16 post-judgment interest;
- 17 L. An award of exemplary damages against Defendants, as well as attorneys' fees and
- 18 costs incurred in this action;
- 19 M. An award of punitive and exemplary damages against Defendants;
- 20 N. A preliminary and permanent injunction against Defendants, and their employees
- 21 or representatives, and all persons acting in concert or participating with them,
- 22 pursuant to 35 U.S.C. § 283;
- 23 O. To the extent injunctive relief is not awarded, awarding Celgard damages adequate
- 24 to compensate Celgard for Defendants' future infringement, but in no event less
- 25 than a reasonable royalty; and
- 26 P. Any further relief that this Court deems just and proper.
- 27
- 28

1 DATED: March 2, 2020

Respectfully submitted,

2  
3 By: /s/ Bryan J. Vogel  
Bryan J. Vogel (*pro hac vice*)

4 **ATTORNEYS FOR PLAINTIFF**  
5 **CELGARD, LLC**  
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ATTORNEYS AT LAW  
MOUNTAIN VIEW